

=> d\his

(FILE 'HOME' ENTERED AT 06:43:53 ON 19 MAY 2005)  
FILE 'REGISTRY' ENTERED AT 06:44:07 ON 19 MAY 2005  
L1 188 S (BENZOQUINOLINE AND HYDROXY) OR HYDROXYBENZOQUINOLINE OR  
((HYDROXYBENZO AND QUINOLINE))  
L2 2 S L1 AND (SULF? OR SULPH?)  
L3 1157 S BENZO AND QUINOLINE AND (SULPH? OR SULF?)  
L4 188 S L3 AND HYDROXY?  
L5 20 S L4 AND 10 AND 7  
L6 5 S L5 AND H  
L7 1 S L6 NOT(ISO? OR COPPER OR DISULF?)  
L8 5 S AMMONIUM BIFLUORIDE  
L9 2 S L8 AND AMMONIUM FLUORIDE  
L10 1 S L9 NOT NITRIC  
SEL NAME L10  
FILE 'CA' ENTERED AT 06:59:55 ON 19 MAY 2005  
L11 3009 S L7,L10 OR E1-21 OR NH4HF2 OR NH4(W) (BIFLUORIDE OR HF2 OR F2H OR  
FHF) OR NH5F2  
L12 56 S L11 AND (BERYL? OR BEO##)  
L13 1318 S (SOLUB? OR DISSOL? OR DECOMP?) (10A) (BERYL? OR BEO## OR ROCK OR  
SOIL OR SAND OR SILIC?) AND(BERYL? OR BEO##)  
L14 6 S L13 AND FLUORESCEN?  
L15 251 S L13 AND(SOLUB? OR DISSOL? OR DECOMP?) (5A) (AGENT OR REAGENT OR  
SOLUTION OR MIXTURE)  
L16 36 S L15 AND(ANALY? OR DETECT? OR DETERMIN? OR MONITOR? OR MEASUR? OR  
TEST? OR DYE OR INDICATOR) (7A) (BERYL? OR BEO##)  
L17 98 S L12,L14,L16

=> d bib,ab 117 1-98

L17 ANSWER 13 OF 98 CA COPYRIGHT 2005 ACS on STN  
AN 124:359350 CA  
TI Simple method for the dissolution of atmospheric aerosol samples for  
analysis by inductively coupled plasma mass spectrometry  
AU Jalkanen, Liisa M.; Haasaanen, Erkki K.  
CS Finnish Meteorological Inst., Air Quality Res., Helsinki, FIN-00810,  
Finland  
SO Journal of Analytical Atomic Spectrometry (1996), 11(5), 365-369  
AB A dissoln. method for atm. aerosol samples should be simple and quant.  
with the least possibility for contamination as the trace element  
concn. and masses in these samples are very low; the masses are often  
between 100 and 1000 µg. A simple procedure, in which the aerosol  
sample is dissolved at room temp. in a disposable test-tube in an HNO3-  
HF mixt. (3 + 1), is presented. There are no evaporative losses; the  
elements are dissolved quant. and the possibilities for contamination  
are minimized. The elemental concns. are detd. by ICP-MS. The blank  
values for the aerosol collection membrane filters, reagents and test-  
tubes are presented. The accuracy and precision of the method were  
assessed with SRMs. For NIST SRM 1633a Coal Fly Ash, the recoveries for  
As, Cd, Cr, Cu, Fe, Ni, Pb, U, V, Zn, Be, Ca, Co, Mg, Mn, Mo, Sb, Sr, Ti  
and Tl were over 90%. For NIST SRM 1648 Urban Particulate Matter, the  
recoveries varied between 80 and 98% for the elements Al, As, Cd, Cu,  
Fe, K, Ni, Pb, Se, U, V and Zn. The results for real atm. samples

dissolved by this method were compared with results for Al, Mn, Na and V obtained by instrumental NAA. The results showed good agreement, with correlation coeffs. ranging from 0.970 to 0.988 and slopes from 0.92 to 1.10.

L17 ANSWER 18 OF 98 CA COPYRIGHT 2005 ACS on STN  
AN 116:44390 CA  
TI Mechanical activation and reactivity of **beryllium**  
AU Medvedev, A. S.; Zelikman, A. N.; Mikhailov, Yu. M.; Popov, A. M.  
CS Mosk. Inst. Stali Splavov, Moscow, USSR  
SO Izvestiya Vysshikh Uchebnykh Zavedenii, Tsvetnaya Metallurgiya (1991),  
(2), 64-8  
LA Russian  
AB Mech. activation in a centrifugal planetary mill resulted in wt. loss and decrease in mosaic block size of **beryl**. The activation energy of leaching with 3.5 M **NH4HF2** at 150-180° is ~ 75 and ~ 40 kJ/mol for unactivated and activated **beryl**, resp., and Be recovery in 5-h leaching at 180° is resp. 65-70 and 97.7%. Leaching recovery with 2.5 M H2SO4 for 5 h at 180° and liq./solid ratio 8 is ~ 20, 30, and 60% without activation and after wet and dry activation, resp.

L17 ANSWER 42 OF 98 CA COPYRIGHT 2005 ACS on STN  
AN 77:23987 CA  
TI Compositions for etching **beryllium**  
IN Mann, Howard G.  
PA North American Rockwell Corp.  
SO U.S., 3 pp.  
PI US 3654001 A 19720404 US 1968-739648 19680625  
PRAI US 1968-739648 A 19680625  
AB Be and high-Be alloys are etched (chem. milled) by treating with an aq. soln. of 5-15% by wt. H2SO4, oxalic acid, or NH4HF, and 7-10% Cr+6 to prevent channeling. The etchant should also contain ≤2% by wt. HF acid to eliminate smut from the bath surface, ≤2% by wt. NaNO3 to inhibit pitting, and wetting agents. The Be concn. in the bath should be ≤0.1 lb Be/gal. of soln. because the presence of Be inhibits the etching rate. Preferably, the temp. of the etching bath is 70-140°F and the temp. and concn. of the bath are maintained to permit an etching rate of 5-15 mil/hr.

L17 ANSWER 46 OF 98 CA COPYRIGHT 2005 ACS on STN  
AN 72:58472 CA  
TI Etching and removing oxide and smut from **beryllium**  
IN Batiuk, Walter; Hallberg, Terry A.  
PA Boeing Co.  
SO U.S., 2 pp.  
PI US 3488238 A 19700106 US 1966-520650 19660114  
PRAI US 1966-520650 A 19660114  
AB Preferred solns. for removing oxide from Be articles such as elec. conductors contain 2.2-2.99 moles **NH4HF2** and 0.67-0.84 moles H3PO4, this removal may require 0.5-3 min at 80-100°F. Large amts. of soln. can be made up by dissolving 85 lb bifluoride in 75 gal H2O, then adding 10 gal 85% acid, mixing, and adding H2O to 100 gals. After oxide is removed, the same soln. is used at the same temp. for etching or metal removal at

the rate of 0.75 mil/min thickness from each exposed surface. Emery cloth should be used to remove residual stubborn areas of oxide before attempting a uniform etch or metal removal depth. Removal of 2-3 mils depth is generally sufficient for eliminating surface notches that might lead to cracks or fractures on deformation. After rinsing, smut is removed for brightening by 1-3 min in a soln. contg . H<sub>3</sub>PO<sub>4</sub> 12.2-13.4, H<sub>2</sub>O 1.66-3.32, CrO<sub>3</sub> 1.12-1.27, and H<sub>2</sub>SO<sub>4</sub> 0.61 -0.84 moles at 70-110°F. The surface may become rougher if left in this soln. over 3 min, although it is a polishing soln. otherwise. After brightening in this soln. the articles should be rinsed, dried, and wrapped.

L17 ANSWER 52 OF 98 CA COPYRIGHT 2005 ACS on STN  
AN 64:50284 CA  
OREF 64:9359h,9360a  
TI Chemical milling of **beryllium**  
AU Missel, L.; Shaheen, M. E.  
CS Lockheed Missiles & Space Co., Palo Alto, CA  
SO Metal Finishing (1965), 63(11), 69-71  
AB The etching rate of **NH4 bifluoride** baths is easier to control than that of H<sub>2</sub>SO<sub>4</sub> baths. The acid etch gives a smoother surface, but the bifluoride etch has less tendency to create deep pits. Blasting with water-suspended abrasive is recommended after chem. milling before any other processing.

=> log y  
STN INTERNATIONAL LOGOFF AT 07:19:41 ON 19 MAY 2005

=> d his

(FILE 'HOME' ENTERED AT 15:56:52 ON 18 MAY 2005)  
FILE 'CA' ENTERED AT 15:57:01 ON 18 MAY 2005  
L1 9473 S (BERYL? OR BEO##) (7A) (DETECT? OR DETERMIN? OR ASSAY? OR ANALY? OR ASSESS? OR ACERTAIN? OR TEST? OR MEASUR? OR MONITOR? OR ESTIMAT? OR EVALUAT? OR EXAMIN? OR SENSE# OR SENSOR OR SENSING OR IDENTIF? OR PROBE# OR PROBING OR QUANTITAT? OR QUANTIF? OR CHECK?)  
L2 361 S L1 AND FLUORESCEN?  
L3 95 S L2 AND (XRAY OR X RAY) (A) FLUORESCEN?  
L4 1 S L3 AND (INDICATOR OR DYE)  
L5 266 S L2 NOT L3  
L6 44 S L2 AND (SOLUB? OR DISSOL?)  
L7 279 S L2 AND(FLUORESCEN? OR FLUORIMET? OR FLUOROMET?) (5A) (DETECT? OR DETERMIN? OR ASSAY? OR ANALY? OR ASSESS? OR ACERTAIN? OR TEST? OR MEASUR? OR MONITOR? OR ESTIMAT? OR EVALUAT? OR EXAMIN? OR SENSE# OR SENSOR OR SENSING OR IDENTIF? OR PROBE# OR PROBING OR QUANTITAT? OR QUANTIF? OR CHECK?)  
L8 62 S L5 NOT L7  
L9 36 S L8 AND(MORIN OR FIELD OR BENZO? OR INDICATOR OR DYE OR REAGENT OR SMALL OR CONTACT PRINT OR MINERAL OR EXTRACTION OR SMEAR)  
L10 204 S L5 AND L7  
L11 240 S L9-10

=> d bib,ab 1-240 111

L11 ANSWER 8 OF 240 CA COPYRIGHT 2005 ACS on STN

AN 140:55804 CA  
TI Spectrofluorimetric determination of trace amounts of **beryllium** in mineral water and human's hair  
AU Jiang, Chongqiu; He, Fang  
CS Department of Chemistry, Shandong Normal University, Jinan, 250014, Peop. Rep. China  
SO Spectrochimica Acta, Part A: Molecular and Biomolecular Spectroscopy (2003), 59A(6), 1321-1328  
AB A new **fluorescent** reagent, 2-hydroxy-1-naphthaldehydene-8-aminoquinoline (HNAAQ), was synthesized. The **fluorescent** reaction of this reagent with beryllium was also studied. Based on this chelation, a highly sensitive spectrofluorimetric method was developed for **detrn.** of trace amts. of **beryllium** at pH 9.2. Under these conditions, the Be-HNAAQ complex has excitation and emission maxima at 410 and 450 nm, resp. The linear range of the method is from 0 to 35 µg l-1 and detection limit is 0.099 µg l-1 of beryllium. Interference of other ions was studied. It is necessary to remove the interfering cations through concealing by EDTA and extn. sepn. techniques. The selectivity of the method can be increased remarkably. The procedure can be easily performed and affords good precision and accuracy. This method has been successfully applied to the **detrn.** of **beryllium** in mineral water and human's hair.

L11 ANSWER 15 OF 240 CA COPYRIGHT 2005 ACS on STN  
AN 138:82565 CA  
TI Selective Determination of **Beryllium(II)** Ion at Picomole per Decimeter Cubed Levels by Kinetic Differentiation Mode Reversed-Phase High-Performance Liquid Chromatography with **Fluorometric Detection** Using 2-(2'-Hydroxyphenyl)-10-hydroxybenzo[h]quinoline as Precolumn Chelating Reagent  
AU Matsumiya, Hiroaki; Hoshino, Hitoshi  
CS Department of Applied Chemistry Graduate School of Engineering, Tohoku University, Sendai, 980-8579, Japan  
SO Analytical Chemistry (2003), 75(3), 413-419  
AB A highly sensitive and selective method for the **detrn.** of the Be(II) ion was developed using reversed-phase HPLC with **fluorometric detection** using 2-(2'-hydroxyphenyl)-10-hydroxybenzo[h]quinoline (HPHQ) as a precolumn (off-line) chelating reagent. The reagent HPHQ was designed to form the kinetically inert Be chelate compatible with high **fluorescence** yield, which is appropriate to the HPLC-**fluorometric detection** system. The Be-HPHQ chelate is efficiently sepd. on a LiChrospher 100 RP-18(e) column with a MeOH (58.3%)-H<sub>2</sub>O eluent contg. 20 mmol kg-1 of tartaric acid and is **fluorometrically detected** at 520 nm with the excitation at 420 nm. Under the conditions used, the concn. range of 20-8000 pmol dm-3 of Be(II) ion can be detd. without interferences from 10 µmol dm-3 each of common metal ions, typically Al (III), Cu(II), Fe(III), and Zn(II), and still more coexistence of Ca(II) and Mg(II) ions at 0.50 mmol dm-3 and 5.0 mmol dm-3, resp., is tolerated. The detection limit ( $3\sigma$  baseline fluctuation) is 4.3 pmol dm-3 (39 fg cm-3). The extraordinarily high sensitivity with toughness toward the matrix influence was demonstrated with the successful application to environmental Be analyses, such as **detrn.** of Be in rainwater and tap H<sub>2</sub>O.

- L11 ANSWER 18 OF 240 CA COPYRIGHT 2005 ACS on STN  
AN 136:251507 CA  
TI A novel **fluorescence** reagent, 10-hydroxybenzo[h]quinoline-7-sulfonate, for selective **determination** of **beryllium**(II) ion at pg cm<sup>-3</sup> levels  
AU Matsumiya, Hiroaki; Hoshino, Hitoshi; Yotsuyanagi, Takao  
CS Department of Applied Chemistry, Graduate School of Engineering, Tohoku University, Aoba, Aramaki, Aoba-ku, Sendai, 980-8579, Japan  
SO Analyst (Cambridge, United Kingdom) (2001), 126(11), 2082-2086  
AB A facile method was developed for the highly sensitive, selective detn. of ultra-trace Be<sup>2+</sup> using a new fluorimetric reagent, 10-hydroxybenzo[h]quinoline-7-sulfonate (HBQS), under extremely alk. conditions, at pH 12.0. This reagent is quite suitable for the very small ion, Be<sup>2+</sup>, to form a 6-membered chelate ring, compatible with a high **fluorescence** yield. Chelate stoichiometry is 1:1 for Be-HBQS at pH 12.0. The calibration graph gave a wide linear dynamic range, 2-100 nmol/dm<sup>3</sup> Be<sup>2+</sup> with a detection limit (3s blank) of 0.52 nmol/dm<sup>3</sup> (4.7 pg/cm<sup>3</sup>). Excellent sensitivity and toughness toward the matrix influence were demonstrated using the artificial sample solns. for airborne dust. Coupled with a simple masking procedure using EDTA, the method enables Be<sup>2+</sup> detn. at nanomolar concns. in the presence of metals at the natural abundance levels in airborne dust, typically Al, Ca, Cu, Fe, Mg, Pb, and Zn at 130, 150, 1.0, 70, 33, 3.0, and 8.0 μmol/dm<sup>3</sup>, resp., in the final soln. The proposed method was successfully used to det. Be in urban air.
- L11 ANSWER 50 OF 240 CA COPYRIGHT 2005 ACS on STN  
AN 123:101487 CA  
TI Synthesis of a new azo reagent and studies on its fluorimetric properties with beryllium  
AU Ji, Zhiqin; Lai, Chunqiu; Yang, Changxin; Huang, Jianfeng  
CS Inst. Appl. Chem., Nanchang Univ., Nanchang, 330047, Peop. Rep. China  
SO Huaxue Shiji (1994), 16(5), 269-70, 76  
LA Chinese  
AB The characterization and properties of a new reagent 7-(2'-arseno-5'-carboxy)benzeneazo-8-hydroxyquinoline-5-sulfonic acid are described. A new **fluorometric** method was developed for the **detn.** of **beryllium** with this reagent. The linear detn. range was 0-5 μg/25 mL Be and the detection limit was 3.88 ppb. The method was used to **det. beryllium** in water samples and artificially-synthesized copper alloys with satisfactory results.
- L11 ANSWER 55 OF 240 CA COPYRIGHT 2005 ACS on STN  
AN 118:204235 CA  
TI Extraction-spectrofluorimetric **determination** of **beryllium** by flow-injection **analysis** with 2-methyl-8-hydroxyquinoline. **Determination** of **beryllium**(II) in alloys  
AU Martin Esteban, A.; Fernandez, P.; Perez-Conde, C.  
CS Fac. Cienc. Quim., Univ. Complutense, Madrid, 28040, Spain  
SO Quimica Analitica (Barcelona, Spain) (1991), 10(4), 347-54  
AB A spectrofluorimetric method for **beryllium** **detn.** is described, based on formation of the **fluorescent** complex Be(II)-2-methyl-8-hydroxyquinoline, extractable into chloroform, by liq.-liq. extn. in a flow-injection

system. The calibration graph is linear up to 0.3 ppm and that the limit of detection is 0.13 ppb of Be(II). The proposed method has been successfully applied to the **detn.** of **beryllium** in copper-based alloys.

L11 ANSWER 56 OF 240 CA COPYRIGHT 2005 ACS on STN  
AN 118:32252 CA  
TI Chromotropic acid as fluorogenic reagent. I. **Fluorometric determination of beryllium**  
AU Pal, Bijoli Kanti; Baksi, Kalyan  
CS Chem. Dep., Jadavpur Univ., Calcutta, 700 032, India  
SO Mikrochimica Acta (1992), 108(3-6), 275-83  
AB A highly sensitive and almost specific fluorometric method has been developed for rapid **detn.** of **beryllium** at ng/mL and sub-ng/mL levels with chromotropic acid as reagent at pH 4.8-6.0. The **fluorescence** intensity ( $\lambda_{\text{ex}} = 362 \text{ nm}$ ,  $\lambda_{\text{em}} = 387 \text{ nm}$ ) is stable for 24 h. The calibration graph is linear over the range 0.1-60 ng/mL beryllium; a 1:1 complex is formed. Over sixty anions and cations, and some complexing agents such as EDTA, oxalate, tartrate, ascorbic acid, thiourea, phthalate, citrate, S2O32-, SCN- and salicylate do not interfere even when present in large excess. The method has been applied successfully for the **detn.** of **beryllium** in ores, alloys, steels, environmental waters and in biol. samples. The method is virtually specific and requires no preconcn. or clean-up steps.

L11 ANSWER 85 OF 240 CA COPYRIGHT 2005 ACS on STN  
AN 106:226639 CA  
TI **Fluorometric determination of beryllium** in rocks, alloys and steels with Nuclear Fast Red  
AU Salinas, Francisco; Munoz de la Pena, Arsenio; Munoz de la Pena, Francisco  
CS Dep. Anal. Chem., Univ. Extremadura, Badajoz, 06071, Spain  
SO Analyst (Cambridge, United Kingdom) (1987), 112(5), 645-8  
AB A spectrofluorometric method for the detn. of trace amts. of Be is based on its reaction with Nuclear Fast Red. The detection limit is 3 ng mL<sup>-1</sup> and the method can be used to det. 10-80 ng mL<sup>-1</sup> Be. The stoichiometry of the complex is 1:1. The method was satisfactorily applied to the detn. of Be in rocks, alloys, and steels.

L11 ANSWER 89 OF 240 CA COPYRIGHT 2005 ACS on STN  
AN 105:218019 CA  
TI Leucoquinizarin as an **analytical** spectrophotometric and **fluorometric** reagent. Part 2. **Determination of beryllium**  
AU Bello Lopez, Miguel Angel; Callejon Mochon, Manuel; Gomez Ariza, Jose L.; Guiraum Perez, Alfonso  
CS Fac. Chem., Univ. Seville, Seville, 41012, Spain  
SO Analyst (Cambridge, United Kingdom) (1986), 111(11), 1293-6  
AB The reaction between Be and leucoquinizarin was studied both spectrophotometrically and spectrofluorometrically, and methods for the detn. of Be are proposed on the basis of the 1:1 chelate formed. The yellow chelate is formed at pH 5.3-5.5 in a medium contg. 20% of EtOH, and the absorption is measured at 438 nm. The molar absorptivity ( $1.2 \times 10^4 \text{ L mol}^{-1} \text{ cm}^{-1}$ ) allows the detn. of 0.1-0.8 ppm of Be. The **fluorometric** method allows the **detn.** of 5-100 ppb of Be<sup>2+</sup> in a medium

contg. acetate buffer (pH 4.6) and 70% of EtOH ( $\lambda_{\text{exc}} = 450$  nm,  $\lambda_{\text{em}} = 476$  nm). The **fluorometric** method was applied to the **detn.** of Be in an Al-Mg alloy.

L11 ANSWER 93 OF 240 CA COPYRIGHT 2005 ACS on STN  
AN 104:28080 CA

TI **Fluorometric determination of beryllium** with pyridoxal-5-phosphate

AU Petidier, A.; Rubio, S.; Gomez-Hens, A.; Valcarcel, M.

CS Fac. Sci., Univ. Cordoba, Cordoba, Spain

SO Talanta (1985), 32(11), 1041-5

AB A simple, rapid, and selective method for the detn. of Be with pyridoxal-5-phosphate was developed. The system is only **fluorescent** ( $\lambda_{\text{ex}} 360$ ,  $\lambda_{\text{em}} 460$  nm) in the presence of a nitrogenous base such as ammonia, ethylenediamine, or pyridine; owing to the possible formation of a ternary complex. The calibration graph is linear over the range 8-60 ng/mL. The high selectivity of the method permits the detn. of Be in various types of alloys.

L11 ANSWER 95 OF 240 CA COPYRIGHT 2005 ACS on STN  
AN 102:231054 CA

TI **Fluorometric determination of beryllium** using 2-(o-hydroxyphenyl)benzoxazole

AU Gladilovich, D. B.; Stolyarov, K. P.

CS Leningrad State Univ., Leningrad, USSR

SO Zhurnal Analiticheskoi Khimii (1985), 40(4), 653-7

AB **Beryllium** was **detd.** in Cu base alloys and silicate rock stds. by fluorometry of its 1:2 complex with 2-(o-hydroxyphenyl)benzoxazole in > 40% EtOH at pH 7.2-7.5. The calibration graph is linear for detg.  $1 \times 10^{-7}-4 \times 10^{-6}$  mol Be/L. The detection limit is 0.6 ng Be/mL ( $3\sigma$ ). The selectivity of the method was tested. The absorption and luminescence spectra of the reagent were recorded and its ionization const. was detd. ( $pK = 10.3$  in 50% EtOH).

L11 ANSWER 112 OF 240 CA COPYRIGHT 2005 ACS on STN  
AN 90:47932 CA

TI Solvent extraction-**fluorimetric determination of beryllium** with 2-hydroxy-3-naphthoic acid

AU Gladilovich, D. B.; Grigor'ev, N. N.; Stolyarov, K. P.

CS A. A. Zhdanov Leningr. State Univ., Leningrad, USSR

SO Zhurnal Analiticheskoi Khimii (1978), 33(11), 2113-18

AB To **det.** Be by extn. and **fluorometry**, its 1:1 complex with 2-hydroxy-3-naphthoic acid (I) was extd. from a urotropin buffer by 3 portions of BuOH and the **fluorescence** of the ext. was **measured** at 459 nm. The detection limit was 0.002  $\mu\text{g}$  Be/mL. Foreign ions were masked with Ca ethylenediaminetetraacetate. The improved selectivity of the extn.-fluorometric method in comparison to the **fluorometric** one was used for **detg.** Be in Cu base alloys and silicate rocks. The degree of extn. of the 1:1 Be-I complex decreased with increasing mol. wt. of the extg. alc. from 78.0% with BuOH to 59.5% with heptyl alc. The wavelength of absorption max. of the 1:1 Be-I complex were 369 and 31 nm in BuOH and heptyl alc., resp.

- L11 ANSWER 118 OF 240 CA COPYRIGHT 2005 ACS on STN  
AN 85:201541 CA  
TI **Fluorimetric determination of beryllium** with o-pyridinophenol  
AU Kabrt, L.; Holzbecher, Z.  
CS Dep. Anal. Chem., Inst. Chem. Technol., Prague, Czech.  
SO Collection of Czechoslovak Chemical Communications (1976), 41(2), 540-7  
AB To det. Be **fluorimetrically**, the blue **fluorescence** of its 1:1 complex with o-pyridinophenol (I) at pH ~12.8 (aq. EtOH) (conditional stability const.  $3.1 \times 10^4$ ) was measured in 50% EtOH. The excitation wavelength was 365 nm. Foreign ions were masked with 4mM EDTA (di-Na salt). Max. **fluorescence** intensity was attained with a 10-fold reagent excess. The detn. limit was 1.6 ng Be/ml. The calibration curve was linear for  $\leq 0.54 \mu\text{g}$  Be/ml. F-, Fe(III), Zr(IV), Cr(III), and BO<sub>3</sub><sup>3-</sup> interfere. Morin is a more sensitive reagent than I, but the aq.-alc. solns. of I and Be-I are more stable. The intensity of **fluorescence** increases almost linearly with increasing EtOH concn. up to 80 vol.%.
- L11 ANSWER 121 OF 240 CA COPYRIGHT 2005 ACS on STN  
AN 85:116093 CA  
TI Some bisazo derivatives of chromotropic acid as luminescent reagents for beryllium  
AU Savvin, S. B.; Chernova, P. K.; Kudryavtseva, L. M.  
CS V. I. Vernadskii Inst. Geochem. Anal. Chem., Moscow, USSR  
SO Zhurnal Analiticheskoi Khimii (1976), 31(2), 269-73  
AB Arsenazo III (I) or Chlorphosphonazo III (II) undergo highly sensitive **fluorescence** reactions with Be in acid medium at pH 3-5; an absorbance line at 610 nm is found for the 1:1 Be/I complex, which has no **fluorescence** properties. At pH 8-12, 3 **fluorescent** complexes are formed with Be/I ratios of 1:1, 2:1 and 4:1. II reacts with Be in the same way, with the exception that the complex forming in an acid medium has 2 max. at 680 and 620 nm. At pH 12 alkali and alk. earth elements, rare earths, Pb, Sb(III), Sn(IV), Hg(III), Co, Ni, Ag, Ti(IV), and Sc (10-fold excess) do not affect Be detn.; Cu(II), Fe(III) and Cr(III) decrease the **fluorescence**. **Fluorescence** is linearly related to concn. for 0.9-8.0  $\mu\text{g}$  Be. The reactions can be used for detn. of  $\mu\text{g}$  amts. of Be without sepn. of accompanying elements.
- L11 ANSWER 123 OF 240 CA COPYRIGHT 2005 ACS on STN  
AN 84:173318 CA  
TI Use of 1-hydroxy-2-carboxyanthraquinone for the spectrofluorometric **determination of beryllium(II)**  
AU Capitan, F.; Salinas, F.; Franquelo, L. M.  
CS Fac. Sci., Univ. Granada, Granada, Spain  
SO Analytical Letters (1975), 8(10), 753-61  
AB A new spectrofluorometric method for the detn. of Be (30-130 ppb) by using 1-hydroxy-2-carboxyanthraquinone (I) as the reagent is described. Beryllium reacts with I in alk. medium to form a pink **fluorescent** soln.; the complex has an excitation max. at 470 and emission max. at 575 nm; the sensitivity is  $1:5 \times 10^6$ . The interference by foreign was also studied.
- L11 ANSWER 178 OF 240 CA COPYRIGHT 2005 ACS on STN  
AN 58:36043 CA

OREF 58:6175b-d  
TI Geochemical field method for beryllium prospecting.  
AU Patten, L. E.; Ward, F. N.  
CS U.S. Geol. Survey, Denver, CO  
SO U.S. Geological Survey Professional Paper (1962), No. 450-C, 103-4  
AB cf. Sandell, Colorimetric Determination of Traces of Metals 1959, p. 1032 (CA 53, 5981b); Sill and Willis, CA 53, 12038i). Mix 0.25 g. sample with 0.5 g. NH<sub>4</sub>HF<sub>2</sub>, heat in a sand bath until dense white fumes cease evolving, break up the mass, and reheat just below red heat until fuming ceases, add 5 ml. 0.1N HNO<sub>3</sub>, heat to 90-4°, centrifuge, transfer a 2-ml. aliquot to a 22 × 175-mm. calibrated test tube, add 3 ml. triethanolamine-EDTA soln. (5 g EDTA and 3 ml. colorless triethanolamine in 100 ml. H<sub>2</sub>O), 5 ml. pH 11.8 piperidine buffer (30 g. diethylenetriaminepentaacetic acid, 150 ml. piperidine, and 40 g. Na<sub>2</sub>SO<sub>3</sub> in 1 l.), and 10 ml. 0.0015% morin (15 ml. 0.01% morin in 95% alv. + 85 ml. H<sub>2</sub>O). Dil. to vol., and est. Be by comparing its **fluorescence** with that of a series of standards contg. 0, 0.1, 0.2, 0.5, 1.0, 2.0, and 5.0 γ Be. Results agree well with those obtained by spectrography.

L11 ANSWER 185 OF 240 CA COPYRIGHT 2005 ACS on STN

AN 56:21565 CA

OREF 56:4083i,4084a-c

TI Improvements in the **fluorometric determination** of submicrogram quantities of **beryllium**

AU Sill, Claude W.; Willis, Conrad P.; Flygare, Kenneth J., Jr.

CS U.S. At. Energy Comm., Idaho Falls, ID

SO Anal. Chem. (1961), 33, 1671-84

AB An improved method for the detn. of Be with morin is described. Alk. solns. of morin were stabilized to air, without the use of reducing agents, by exclusion of compds. capable of oxidizing morin directly, and by using either EDTA or diethylenetriaminopentaacetic acid (DTPA) to complex Cu and other metallic ions capable of catalyzing the air oxidn. Use of DTPA in place of EDTA prevents formation of **fluorescent** complexes of morin with So, Y, and La, and increases the selectivity greatly. A new combination of primary and secondary filters produces a 3-fold increase in the ratio of net Be **fluorescence** to blank **fluorescence** while requiring an instrumental sensitivity only 25% of that obtained with the previous combination. Errors produced by the absorption of colorless ions in the ultraviolet are eliminated by using exciting wavelengths entirely in the visible region. Be is extensively adsorbed from alk. solns. on the glass walls of the container. The **fluorescent** species contains Be and morin in a mole ratio of 1:1. Be can be detd. in air dust in approx. 30 min. at concns. well below the max. permissible levels without sepn. of any kind.

L11 ANSWER 187 OF 240 CA COPYRIGHT 2005 ACS on STN

AN 56:10683 CA

OREF 56:1985i,1986a-b

TI **Determination** of **beryllium** in ores and rocks by a dilution fluorometric method with **morin**

AU May, Irving; Grimaldi, F. S.

CS U.S. Geol. Survey, Washington, DC

SO Anal. Chem. (1961), 33, 1251-3

AB A few p.p.m. Be was detd. in low-grade ores without sepn. High sensitivity is obtained by adopting instrumental and reaction conditions to give a satisfactory ratio of Be to blank **fluorescence** and minimizing the Fe interference with EDTA. No interference was obtained at the level of 1 mg. of oxide/25 ml. with Al, As(V), Cd, Ca, Co, Cu, Ga, Ge, In, Pb, Mg, Mn, Hg, Mo, Ni, Se, Sn, W, V, and Zn. Sb(III and V) do not interfere up to 200  $\gamma$  of the oxides; higher concns. were not tested. No anion interference (as Na salts) was shown by 1 mg. of SiO<sub>2</sub>; by borate equiv. to 10 mg. B<sub>2</sub>O<sub>3</sub>; 20 mg. ClO<sub>4</sub><sup>-</sup>, SO<sub>4</sub><sup>2-</sup>, or NO<sub>3</sub><sup>-</sup>; 1 mg. of F<sup>-</sup>; and 2 mg. of Br<sup>-</sup>. Tartrate reduces the **fluorescence** of the Be complex.

L11 ANSWER 192 OF 240 CA COPYRIGHT 2005 ACS on STN

AN 54:116762 CA

OREF 54:22195b-f

TI Field **test** for **beryllium** minerals: the morin **fluorescence** method

AU McVay, T. N.

CS U.S. Bur. of Mines, Tuscaloosa, AL

SO Bureau of Mines Report of Investigations (1960), No. 5620, 10 pp.

AB Duplicate powd. rock samples are fluxed, 1 with KHF<sub>2</sub> and 1 with KHSO<sub>4</sub>, followed by dissoln. of salts in H<sub>2</sub>O, conversion of the soln. to an alk. condition, addn. of morin, and **examn.** of the soln. for **fluorescence** under shortwave ultraviolet light. This method provides a fast, dependable field test for Be minerals contg. as little as 0.2% beryl or its equiv. Measure 5 parts by vol. of the powd. mineral and 1 part KHF<sub>2</sub> into a clean porcelain mortar and grind with the pestle to insure thorough mixing. Transfer the mixt. to a new clean porcelain crucible (use a new crucible for each test). Place on a wire tripod and heat with the full intensity of the torch. When the crucible has reached max. temp. shown by no further color change, hold at 30° from the horizontal, and direct the flame on the charge. When the powder becomes orange or red, allow to cool. It is important that the mixt. sinters but does not melt. A melt tends to retain the Be ions and they do not thereafter leach readily with H<sub>2</sub>O. Immobilized ions cannot react with morin to form the necessary **fluorescent** compd. Fill the cooled crucible 2/3 full with H<sub>2</sub>O and digest for 1 hr. Add a pellet of NaOH to alky. Add 5-7 drops of morin-acetone soln. and test with short-wave ultraviolet light. If Be is present, the soln. will show a yellow-green **fluorescence**. The 2nd procedure: Mix equal vols. of the powd. sample and KHSO<sub>4</sub> in a porcelain mortar and pour into a clean porcelain crucible. Melt on a hot plate; decompr. with gas evolution will take place, and the mixt. will resolidify. Allow to cool, fill the crucible about 1/2 full with H<sub>2</sub>O, heat to boiling, and cool. Complete the test as with the KHF<sub>2</sub> procedure; use more NaOH to insure alky. The test involves no radiation hazards and should be useful to prospectors. The morin-acetone soln. is reagent-grade acetone satd. with tech.-grade morin.

L11 ANSWER 197 OF 240 CA COPYRIGHT 2005 ACS on STN

AN 53:71574 CA

OREF 53:12938i,12939a-b

TI **Fluorometric determination** of submicrogram quantities of **beryllium**

AU Sill, Claude W.; Willis, Conrad P.

CS U.S. At. Energy Comm., Idaho Falls, ID

SO Anal. Chem. (1959), 31, 598-608

AB The increasing use of Be in the atomic energy program and the highly toxic nature of its compds. require a method of high sensitivity and reliability for its detection and detn. Although morin is the most sensitive reagent known for the detn. of Be, available procedures are not particularly reliable at extremely low levels. A fluorometric method with morin has been developed that has a detection limit of 0.0004  $\gamma$  and a precision to 0.8% on 0.2  $\gamma$  at the 95% confidence level. Reliability and precision are improved greatly through the use of a buffer system, an internal acid-base indicator, a permanent glass standard of **fluorescence**, and complexing agents. Detailed methods of sepn. of Be and application to air-dust and smear samples, urine, bone, ores and steel are given. They were checked at each step by using Be<sup>7</sup> as a tracer. Errors produced by certain metals and variations in the procedure are described. 15 references.

L11 ANSWER 231 OF 240 CA COPYRIGHT 2005 ACS on STN

AN 36:388 CA

OREF 36:55f-g

TI **Fluorescent tests** for **beryllium** and thorium

AU White, Charles E.; Lowe, C. S.

SO Industrial and Engineering Chemistry, Analytical Edition (1941), 13, 809-10

AB 1 - Amino - 4 - hydroxyanthraquinone gives an intense **fluorescence** with Be in an alk soln. and with Th in an acid soln. Dissolve 0.1 g. in 100 ml. of 95% EtOH. A suitable soln. for the test contains 0.1 g. Be per l. Place 0.1 ml. of such a soln. in a test tube together with 1 ml. of 2.5 N NaOH. Dil. to 10 ml., add 0.5 ml. of reagent and exam. under ultraviolet light. Li gives a similar test. To test for Th make the pH about 2 and proceed similarly. The sensitivity of the Th test is not great.

L11 ANSWER 234 OF 240 CA COPYRIGHT 2005 ACS on STN

AN 35:4335 CA

OREF 35:705g-h

TI **Morin** reaction for beryllium

AU Sandell, E. B.

SO Industrial and Engineering Chemistry, Analytical Edition (1940), 12, 762-4

AB Beryllium gives a yellow-green **fluorescence** with **morin**. The test is best made in 0.01 N NaOH soln. and can be made with 1-2 ml. of soln. in which 0.001  $\gamma$  of Be is present. The test is best observed under ultraviolet light. Ca and Li also give **fluorescence** under the conditions of the Be test but interference of **small** quantities of Ca can be prevented by adding Na<sub>4</sub>P<sub>2</sub>O<sub>7</sub>.

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